

ABSTRACT

A method of making hydrogenated Group IVA compounds having reduced metal-based impurities, compositions and inks including such Group IVA compounds, and methods for forming a semiconductor thin film. Thin semiconducting films prepared according to the present invention generally exhibit improved conductivity, film morphology and/or carrier mobility relative to an otherwise identical structure made by an identical process, but without the washing step. In addition, the properties of the present thin film are generally more predictable than those of films produced from similarly prepared (cyclo)silanes that have not been washed according to the present invention. The present invention advantageously provides semiconducting thin film structures having qualities suitable for use in electronics applications, such as display devices or RF ID tags, while enabling high-throughput manufacturing processes that form such thin films in seconds or minutes, rather than hours or days as with conventional photolithographic processes.